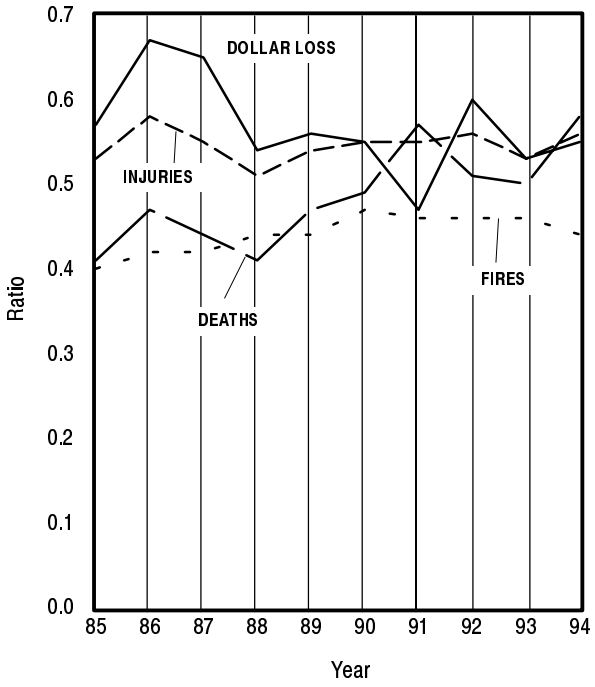
Appendix A

DIFFERENCES BETWEEN NFPA AND NFIRS ESTIMATES

The National Fire Incident Reporting System collects data from nearly 14,000 fire departments. The National Fire Protection Association annual survey of fire departments collects data from more than 3,000 fire departments. Neither is a perfect random sample; not all fire departments asked to participate do so. As one might expect, the distribution of fire departments is not the same in the two samples. And the NFPA survey collects tallied totals whereas NFIRS collects individual incident reports. Not surprisingly, therefore, there are differences between the NFPA annual survey results and the NFIRS results. In each of the 10 years examined (1985–94), the deaths reported to NFIRS represent a larger fraction of the NFPA national estimate of deaths than the NFIRS number of fires is of the NFPA estimate of fires. NFIRS injuries and dollar loss are even larger fractions of the NFPA totals than are deaths or fires (Figure A–1). Not only are the ratios different for fires, deaths, injuries, and dollar loss, but the ratio for fire deaths has sharply increased over time.



	Dollar Loss	Injuries	Deaths	Fires
1985	0.57	0.53	0.41	0.40
1986	0.67	0.58	0.47	0.42
1987	0.65	0.55	0.44	0.42
1988	0.54	0.51	0.41	0.44
1989	0.56	0.54	0.47	0.44
1990	0.55	0.55	0.49	0.47
1991	0.47	0.55	0.57	0.46
1992	0.60	0.56	0.51	0.46
1993	0.53	0.53	0.50	0.46
1994	0.55	0.56	0.58	0.44

Sources: NFPA Annual Surveys and NFIRS

Figure A–1. Ratio of Raw NFIRS Sample to NFPA National Estimates

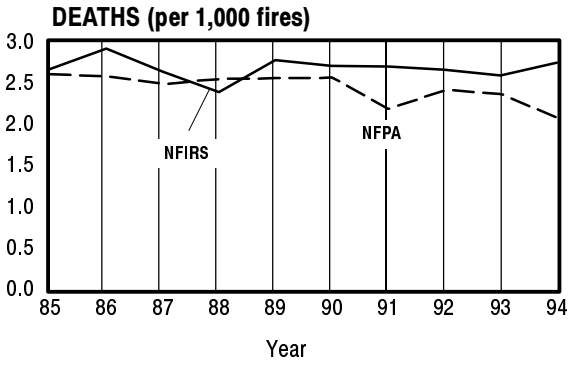
Looking at the problem another way, Figure A–2 shows the number of deaths per fire, injuries per fire, and dollar loss per fire from NFIRS and NFPA from 1985 to 1994. Deaths per fire are quite similar for NFIRS and NFPA, with a maximum difference of 32 percent in 1994. Injuries and dollar loss per fire are consistently lower in the NFPA sample than in the NFIRS sample, but the difference has narrowed in the last few years.

The reasons for these differences are not known. One possibility is that some departments that report summary data to NFPA may undercount their casualties and losses when reporting on the NFPA survey forms. Another possibility is that there are data entry errors in NFIRS, with larger numbers of deaths, injuries, and dollar loss creeping into the database despite edit checks at state and federal levels. (It appears that at least some of the dollar loss difference is due to this.)

A third possibility for the differences is that fire departments might not report some minor fires to NFIRS that they include in their own totals that are reported to NFPA. We know that some departments do not fill out NFIRS forms for minor fires such as food on stove or chimney fires, but we are unsure whether these fires are or are not included in the department's report to NFPA nor the extent of the problem.

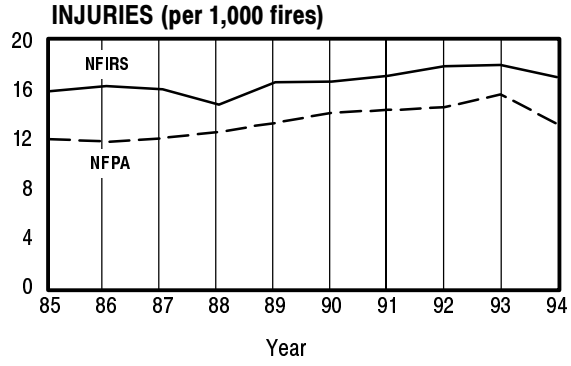
Resolving the differences between the two major sources of fire statistics in the United States is important to prevent confusion among the users of the data. As NFIRS gets more complete data on the population protected by its participating departments, the NFIRS estimates will be able to be made independent of other sources, which should improve consistency, too.

Figure A–3 represents the NFPA survey trends for non-residential property fires and dollar loss.



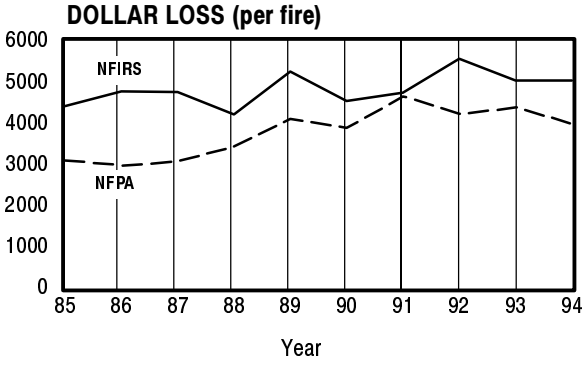
	NFIRS	NFPA
1985	2.67	2.61
1986	2.92	2.58
1987	2.64	2.49
1988	2.39	2.55
1989	2.78	2.56
1990	2.71	2.57
1991	2.70	2.19
1992	2.66	2.41
1993	2.59	2.37
1994	2.75	2.08

10-Year NFIRS Trend = –1.4%
10-Year NFPA Trend = –15.8%



	NFIRS	NFPA
1985	15.87	11.99
1986	16.29	11.81
1987	16.02	12.11
1988	14.77	12.64
1989	16.62	13.36
1990	16.68	14.17
1991	17.12	14.39
1992	17.92	14.61
1993	18.01	15.61
1994	17.02	13.26

10-Year NFIRS Trend = +13.7%
10-Year NFPA Trend = +26.1%

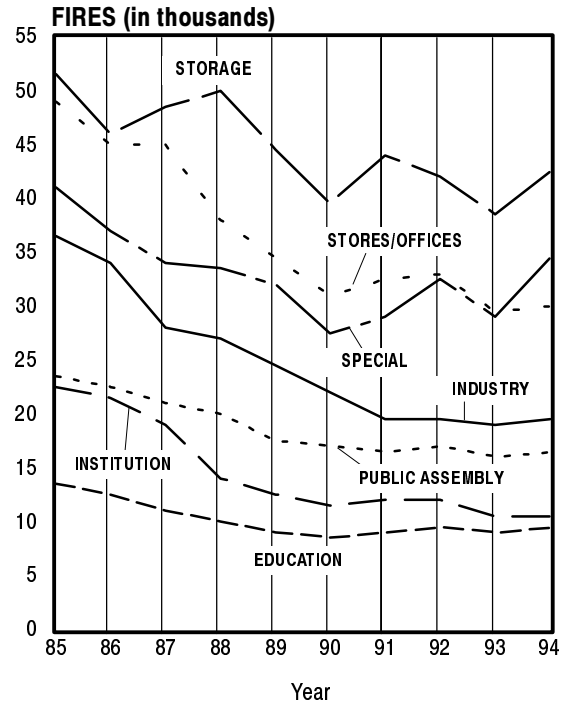


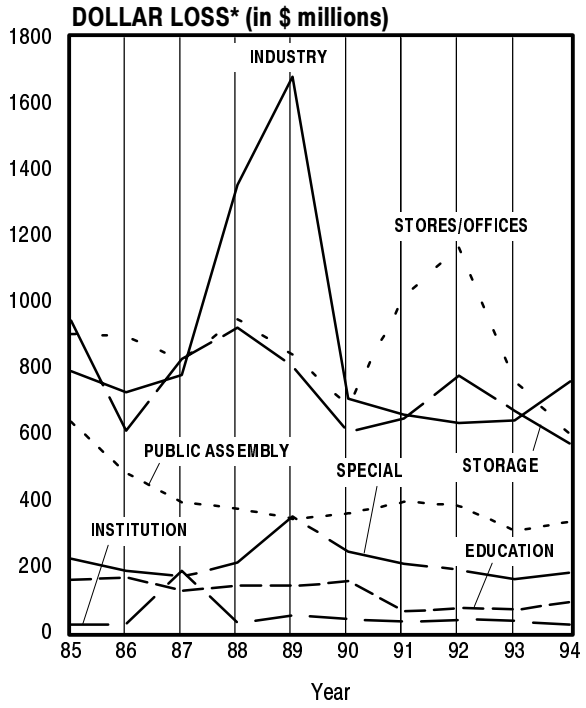
	NFIRS	NFPA
1985	$4,403	$3,089
1986	4,762	2,954
1987	4,744	3,073
1988	4,211	3,428
1989	5,247	4,092
1990	4,532	3,872
1991	4,734	4,637
1992	5,560	4,222
1993	5,035	4,377
1994	5,031	3,967

10-Year NFIRS Trend = +15.2%
10-Year NFPA Trend = +48.6%

Sources: NFPA Annual Surveys and NFIRS

Figure A–2. NFIRS vs. NFPA Survey: Severity of Losses





	Public Assembly	Education	Institution	Stores/Offices	Industry	Storage	Special
Fires							
1985	23,500	13,500	22,500	49,000	36,500	51,500	41,000
1986	22,500	12,500	21,500	45,000	34,000	46,000	37,000
1987	21,000	11,000	19,000	45,000	28,000	48,500	34,000
1988	20,000	10,000	14,000	38,000	27,000	50,000	33,500
1989	17,500	9,000	12,500	34,500	24,500	44,500	32,000
1990	17,000	8,500	11,500	31,000	22,000	39,500	27,500
1991	16,500	9,000	12,000	32,500	19,500	44,000	29,000
1992	17,000	9,500	12,000	33,000	19,500	42,000	32,500
1993	16,000	9,000	10,500	29,500	19,000	38,500	29,000
1994	16,500	9,500	10,500	30,000	19,500	42,500	34,500
Dollar Loss* ($ millions)							
1985	$636	$157	$ 23	$ 901	$ 788	$941	$222
1986	481	166	24	894	725	608	185
1987	391	125	184	824	778	826	168
1988	372	140	29	945	1,352	921	210
1989	342	139	51	840	1,680	804	350
1990	359	154	37	684	706	605	243
1991	394	63	30	1,013	658	646	207
1992	381	72	37	1,167	631	775	187
1993	306	66	31	760	639	668	160
1994	334	91	20	598	758	568	181

* Adjusted to 1994 dollars.

Source: NFPA Annual Surveys

Figure A–3. Trends in NFPA Non-Residential Structure Fires and Dollar Loss by Property Type

Appendix B
DATA TABLES

The six tables in this appendix provide data used in developing the 10-year trend charts in Chapters 3–5 where they were too crowded to present the actual numbers with the graphic.

Table B–1. Residential Fires and Fire Losses

Cause	1985	1986	1987*	1988	1989	1990	1991	1992	1993	1994
Fires										
Incendiary/Suspicious	74,586	76,928	72,202	73,236	68,847	67,467	67,738	66,589	61,888	61,948
Children Playing	29,100	28,615	27,890	27,880	25,952	23,207	24,102	25,463	25,215	25,872
Careless Smoking	46,536	44,780	41,291	40,439	35,533	31,707	30,559	28,814	27,931	26,470
Heating	183,309	149,729	133,623	125,945	116,939	88,339	89,163	87,728	88,695	77,366
Cooking	116,481	115,146	113,723	115,056	109,183	109,741	111,140	118,605	116,919	107,455
Electrical	51,900	49,227	47,222	49,162	44,197	43,662	45,091	43,084	45,089	44,545
Appliances	39,865	39,002	37,542	38,581	35,777	35,395	35,401	34,748	35,322	35,089
Open Flame	37,146	33,973	34,372	35,050	34,253	28,590	27,386	27,797	28,232	30,188
Other Heat	8,597	8,194	7,691	8,072	7,670	6,263	6,318	6,417	6,641	6,973
Other Equipment	6,013	6,554	6,170	6,401	5,547	5,584	5,885	6,564	6,020	7,009
Natural	9,687	10,985	10,569	9,895	10,413	8,820	9,985	8,951	10,164	10,182
Exposure	18,780	18,367	19,206	22,784	19,187	18,226	25,232	17,241	17,885	17,973
Total	622,000	581,500	551,500	552,500	513,500	467,000	478,000	472,000	470,000	451,000
Deaths										
Incendiary/Suspicious	677	770	727	857	809	770	663	698	756	505
Children Playing	409	397	519	526	474	353	450	398	423	426
Careless Smoking	1,567	1,356	1,368	1,500	1,103	1,062	823	994	913	817
Heating	1,050	648	691	783	636	635	542	516	570	503
Cooking	365	420	360	417	382	382	299	280	371	314
Electrical	436	614	472	382	538	382	329	354	353	409
Appliances	101	176	126	175	129	122	121	99	112	147
Open Flame	220	190	252	257	186	218	169	245	168	179
Other Heat	104	119	50	74	88	93	80	80	35	62
Other Equipment	22	37	54	47	20	42	36	29	70	73
Natural	19	7	14	12	37	10	18	13	14	15
Exposure	56	37	25	35	34	48	44	61	38	15
Total	5,025	4,770	4,660	5,065	4,435	4,115	3,575	3,765	3,825	3,465
Injuries										
Incendiary/Suspicious	2,280	2,119	2,342	2,655	2,460	2,595	2,836	2,772	2,521	2,586
Children Playing	2,144	2,246	2,501	2,567	2,513	2,391	2,786	3,019	2,997	2,781
Careless Smoking	3,445	3,153	3,334	3,681	3,095	3,000	2,793	2,767	2,907	2,430
Heating	2,876	2,330	2,489	3,079	2,627	2,211	2,287	2,278	2,595	2,005
Cooking	4,419	4,535	5,019	5,435	4,975	5,573	5,564	5,499	6,143	5,040
Electrical	1,323	1,260	1,490	1,671	1,444	1,477	1,836	1,730	1,854	1,545
Appliances	1,055	1,117	1,033	1,058	1,191	1,186	1,286	1,180	1,300	1,186
Open Flame	1,364	1,301	1,316	1,586	1,471	1,190	1,375	1,352	1,377	1,514
Other Heat	376	374	290	332	330	381	381	343	332	285
Other Equipment	230	227	307	183	265	245	304	277	245	358
Natural	167	163	169	178	193	189	212	153	154	147
Exposure	148	199	150	175	186	211	189	228	175	147
Total										
Dollar Loss (millions of dollars)†										
Incendiary/Suspicious	1,085.2	1,160.7	1,088.7	1,080.1	1,032.2	1,109.6	1,334.8	902.0	913.7	906.6
Children Playing	256.5	252.9	270.5	269.3	278.5	243.0	319.2	232.7	289.0	280.9
Careless Smoking	394.0	378.2	391.0	363.9	324.1	337.9	404.5	231.8	295.9	271.3
Heating	1,070.9	818.0	830.9	885.7	836.9	723.1	902.9	618.6	656.8	631.7
Cooking	424.4	453.9	508.4	508.1	481.8	480.2	548.8	393.1	503.8	531.8
Electrical	839.0	657.8	651.9	754.1	633.0	655.5	813.0	541.2	734.3	612.8
Appliances	295.8	366.7	284.4	296.6	282.0	282.4	351.5	224.0	288.2	263.5
Open Flame	281.5	265.7	299.7	289.4	297.6	338.2	368.7	216.8	299.5	283.8
Other Heat	83.9	86.6	55.3	85.5	121.1	65.3	66.6	53.4	59.9	61.9
Other Equipment	57.6	75.3	81.0	99.7	75.4	103.2	97.0	147.9	103.4	116.6
Natural	123.4	117.2	136.9	124.6	133.9	139.6	214.4	131.8	184.4	169.5
Exposure	285.7	175.3	227.0	279.1	281.9	344.6	619.8	405.2	638.0	186.7
Total	3,774.0	3,556.0	3,699.0	4,020.0	3,998.0	4,253.0	5,552.0	3,880.0	4,843.0	4,317.0

Note: These data support the Figure 36 chart. Columns may not add exactly to the totals due to rounding.

* Adjusted for $150 million questionable fire loss

† Adjusted to 1994 dollars

Sources: NFIRS and NFPA Annual Surveys

Table B–2. One- and Two-Family Dwelling Fires and Fire Casualties

Cause	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Fires										
Incendiary/Suspicious	51,096	53,744	49,795	51,276	47,660	47,762	46,686	46,977	43,838	43,811
Children Playing	21,997	21,529	20.795	20,994	19,276	17,004	17,567	18,722	18,519	18,981
Careless Smoking	27,005	25,816	23,572	23,119	20,194	18,055	17,564	16,761	16,339	16,057
Heating	182,323	150,314	130,894	123,452	115,185	85,443	84,208	84,132	84,730	72,554
Cooking	77,359	78,125	73,941	74,652	69,445	70,160	69,447	73,887	72,053	66,283
Electrical	43,332	41,256	39,129	40,366	37,319	36,530	37,094	35,855	37,539	36,904
Appliances	32,276	32,667	30,496	30,930	28,929	28,592	28,216	27,746	28,284	27,824
Open Flame	30,496	27,683	27,938	28,597	28,315	23,257	21,834	22,562	23,264	24,332
Other Heat	6,615	6,725	6,208	6,664	6,251	5,070	5,102	5,122	5,419	5,484
Other Equipment	4,534	4,859	4,629	4,809	4,262	4,208	4,304	4,682	4,478	5,403
Natural	9,061	10,462	9,911	9,307	9,972	8,375	9,309	8,498	9,669	9,659
Exposure	15,358	14,821	15,694	18,335	15,693	14,543	21,670	13,055	13,868	13,708
Total	501,500	468,000	433,000	432,500	402,500	359,000	363,000	358,000	358,000	341,000
Deaths										
Incendiary/Suspicious	500	543	536	691	548	583	541	554	653	400
Children Playing	315	332	401	413	335	230	376	338	310	270
Careless Smoking	1,157	1,064	1,064	1,079	703	814	592	745	653	608
Heating	972	669	625	772	661	631	524	485	514	444
Cooking	279	349	270	264	314	314	205	248	269	236
Electrical	338	564	448	384	557	306	311	338	318	383
Appliances	81	156	93	168	126	119	96	86	65	120
Open Flame	216	147	215	216	151	206	133	212	147	174
Other Heat	72	114	38	67	67	87	65	61	24	48
Other Equipment	14	42	55	34	17	36	24	29	53	68
Natural	23	8	17	10	46	12	17	16	16	17
Exposure	54	17	17	29	21	32	21	49	12	17
Total	4,020	4,005	3,780	4,125	3,545	3,370	2,905	3,160	3,035	2,785
Injuries										
Incendiary/Suspicious	1,213	1,252	1,297	1,737	1,477	1,529	1,643	1,375	1,498	1,441
Children Playing	1,752	1,617	1,736	1,856	1,969	1,772	1,864	2,229	2,009	1,976
Careless Smoking	2,270	2,044	2,003	2,209	1,797	1,837	1,687	1,581	1,569	1,370
Heating	2,768	2,335	2,370	2,954	2,493	2,141	2,120	2,093	2,327	1,783
Cooking	3,271	3,573	3,788	4,065	3,535	3,928	3,819	3,693	4,083	3,340
Electrical	1,134	1,057	1,311	1,378	1,158	1,245	1,557	1,450	1,480	1,320
Appliances	930	995	812	902	945	1,012	950	960	1,055	874
Open Flame	1,084	1,021	1,076	1,307	1,039	941	1,085	1,057	1,055	1,146
Other Heat	286	263	250	289	275	275	286	287	235	231
Other Equipment	236	232	278	148	243	234	242	234	169	311
Natural	174	144	155	132	160	172	195	161	128	124
Exposure	133	116	123	148	133	166	153	156	92	83
Total	15,251	14,649	15,191	17,125	15,224	15,252	15,601	15,276	15,700	13,999

Note: These data support the Figure 49 chart. Columns may not add exactly to the totals due to rounding.

Sources: NFIRS and NFPA Annual Surveys

Table B–3. Apartment Fires and Fire Casualties

Cause	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Fires										
Incendiary/Suspicious	18,047	17,202	17,775	17,764	16,494	15,913	16,943	16,014	14,571	14,693
Children Playing	6,512	6,364	6,569	6,568	6,066	5,786	6,134	6,263	6,230	6,400
Careless Smoking	14,705	13,934	13,787	13,565	11,345	10,526	10,475	9,306	9,228	8,573
Heating	7,367	6,274	6,695	6,244	5,847	5,647	5,999	5,647	5,940	5,362
Cooking	34,460	32,129	35,615	37,178	34,798	36,070	38,750	41,060	41,376	38,306
Electrical	5,691	5,106	5,637	6,023	4,980	5,250	5,678	5,406	5,775	5,700
Appliances	5,460	4,811	5,323	5,700	5,125	5,391	5,715	5,587	5,581	5,681
Open Flame	5,791	5,301	5,765	5,831	5,241	4,828	4,863	4,794	4,643	5,274
Other Heat	1,739	1,345	1,311	1,398	1,276	1,133	1,153	1,225	1,198	1,347
Other Equipment	1,189	1,320	1,223	1,347	1,024	1,066	1,288	1,539	1,211	1,321
Natural	731	785	783	684	694	646	775	631	719	641
Exposure	2,807	2,926	3,018	3,698	3,109	3,243	3,725	3,528	3,526	3,701
Total	104,500	97,500	103,500	106,000	96,000	95,500	101,500	101,000	100,000	97,000
Deaths										
Incendiary/Suspicious	161	148	157	173	233	175	128	110	122	133
Children Playing	80	66	143	118	95	88	58	80	119	130
Careless Smoking	346	244	270	321	300	217	193	187	235	193
Heating	62	28	37	30	31	41	31	30	29	40
Cooking	68	59	50	79	49	41	70	37	58	59
Electrical	83	40	30	30	33	41	19	24	42	40
Appliances	22	16	23	15	8	12	27	11	16	6
Open Flame	22	23	53	42	26	32	24	32	23	25
Other Heat	12	12	13	15	3	15	19	19	10	14
Other Equipment	6	2	3	0	3	0	10	4	6	0
Natural	0	0	0	0	0	0	0	0	0	0
Exposure	3	12	10	6	10	17	15	11	26	0
Total	865	650	790	830	790	680	595	545	685	640
Injuries										
Incendiary/Suspicious	679	674	795	771	835	791	960	1,080	892	952
Children Playing	426	466	704	668	573	628	835	823	941	704
Careless Smoking	887	847	1,026	1,111	1,011	929	916	1,017	1,128	872
Heating	248	186	248	262	289	212	242	255	266	223
Cooking	1,002	956	1,221	1,289	1,384	1,557	1,638	1,685	1,965	1,616
Electrical	170	207	189	262	242	226	302	267	357	277
Appliances	125	145	197	164	186	201	270	200	224	255
Open Flame	261	244	242	284	343	232	309	291	293	385
Other Heat	78	93	49	63	60	93	89	74	91	52
Other Equipment	16	17	45	17	45	29	61	51	58	56
Natural	10	28	23	31	35	27	20	10	20	22
Exposure	22	62	26	29	58	49	32	72	64	62
Total	3,924	3,925	4,765	4,951	5,061	4,974	5,674	5,825	6,299	5,476

Note: These data support the Figure 60 chart. Columns may not add exactly to the totals due to rounding.

Sources: NFIRS and NFPA Annual Surveys

Table B–4. Hotel/Motel Fires

Cause	1985	1986	1987	1988	1989	1990	1991	1992	1993
Incendiary/Suspicious	1,608	1,666	1,620	1,519	1,307	1,287	1,417	1,077	912
Children Playing	125	140	133	123	119	85	97	106	121
Careless Smoking	1,731	1,779	1,689	1,806	1,388	1,186	1,120	1,084	941
Heating	751	767	786	799	658	509	638	569	598
Cooking	1,071	1,113	1,221	1,159	900	891	1,028	986	879
Electrical	575	679	642	693	521	531	561	552	507
Appliances	754	802	894	914	769	749	818	780	786
Open Flame	448	518	440	466	402	319	361	319	307
Other Heat	99	123	119	85	119	72	79	55	64
Other Equipment	140	164	172	161	126	170	144	161	160
Natural	94	123	166	134	109	74	126	113	114
Exposure	104	126	116	142	84	125	110	199	110
Total	7,500	8,000	8,000	8,000	6,500	6,000	6,500	6,000	5,500

Note: These data support the Figure 68 chart. Columns may not add exactly to the totals due to rounding.

Sources: NFIRS and NFPA Annual Surveys

Table B–5. Non-Residential Fire and Fire Losses

Cause	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Fires										
Incendiary/Suspicious		66,985	59,720	55,063	52,390	48,222	50,871	53,794	45,888	46,472
Children Playing		8,029	7,714	6,955	5,553	4,522	4,887	5,235	4,550	4,934
Careless Smoking		13,760	12,783	11,297	9,673	8,713	8,658	7,933	7,410	6,794
Heating		14,903	13,903	12,780	12,688	10,113	10,350	11,024	10,798	9,927
Cooking		14,853	14,677	13,304	12,285	11,927	12,277	13,239	12,617	11,959
Electrical		23,188	22,647	20,977	18,159	17,674	17,618	17,198	16,765	15,871
Appliances		11,890	11,455	10,498	9,724	9,265	9,344	9,613	9,442	8,849
Open Flame		23,312	22,991	22,288	19,1813	15,805	16,053	16,435	14,447	15,934
Other Heat		4,084	3,883	3,668	,235	2,908	3,017	2,956	2,769	2,999
Other Equipment		16,246	15,445	14,158	13,163	11,404	11,734	11,782	11,650	11,879
Natural		7,555	7,315	6,801	6,308	5,722	5,900	5,133	5,277	5,417
Exposure		13,695	13,967	14,711	12,140	10,725	11,791	11,158	9,888	10,463
Total	237,500	218,500	206,500	192,500	174,500	157,000	162,500	165,500	151,500	151,500
Deaths										
Incendiary/Suspicious	52	64	65	33	46	73	63	63	57	21
Children Playing	12	9	8	2	4	6	26	4	4	0
Careless Smoking	40	48	37	42	26	34	24	20	15	24
Heating	27	16	17	16	17	17	15	6	21	15
Cooking	0	7	8	12	7	17	4	4	6	10
Electrical	25	9	8	21	4	14	15	20	15	12
Appliances	2	11	0	2	9	17	4	6	6	0
Open Flame	22	14	37	28	24	28	17	26	9	21
Other Heat	25	14	3	9	9	8	4	9	3	5
Other Equipment	22	14	31	40	61	17	13	15	9	17
Natural	0	7	3	2	4	56	4	0	7	0
Exposure	12	2	3	7	9	0	0	4	3	0
Total	240	215	220	215	220	285	190	175	155	125
Injuries										
Incendiary/Suspicious	670	761	499	615	643	735	740	556	811	577
Children Playing	102	95	80	96	140	122	70	65	102	76
Careless Smoking	250	275	215	389	268	231	286	214	285	182
Heating	334	307	357	312	214	263	211	255	326	227
Cooking	330	284	264	349	254	282	324	264	413	298
Electrical	395	416	390	397	344	393	305	340	478	353
Appliances	246	208	142	251	223	198	160	166	196	284
Open Flame	454	559	485	483	404	414	435	290	357	366
Other Heat	114	84	72	96	69	71	81	74	78	60
Other Equipment	472	550	685	523	457	506	351	378	746	498
Natural	120	147	165	113	198	168	144	90	122	156
Exposure	39	40	21	50	62	42	19	32	37	22
Total	3,525	3,725	3,375	3,675	3,275	3,425	3,125	2,725	3,950	3,100
Dollar Loss (millions of dollars)*										
Incendiary/Suspicious	1,538.9	1,291.0	1,311.9	1,413.1	881.6	1,019.8	1,139.9	1,903.7	844.8	905.2
Children Playing	36.0	22.9	28.0	37.8	16.4	22.7	21.1	19.6	28.7	22.9
Careless Smoking	99.8	91.0	93.6	122.4	166.3	64.1	94.6	53.7	52.0	70.6
Heating	282.2	222.8	179.6	246.2	202.6	203.2	196.9	176.8	160.3	194.9
Cooking	101.8	96.3	84.1	101.1	95.8	87.5	111.3	90.2	70.6	96.5
Electrical	438.5	415.0	424.3	592.4	341.9	443.5	356.6	306.5	412.7	341.8
Appliances	111,6	95.5	113.9	149.2	87.1	94.9	110.3	81.2	88.2	76.1
Open Flame	254.0	222.6	310.0	329.2	243.3	200.9	185.1	151.2	264.1	217.9
Other Heat	57.9	52.9	60.9	63.1	33.7	67.5	60.2	41.6	44.0	43.3
Other Equipment	348.7	282.0	305.8	362.9	1,884.6	265.7	327.4	193.5	284.9	345.8
Natural	194.8	119.7	139.9	211.7	108.7	172.1	253.4	96.2	129.3	143.4
Exposure	203.8	172.6	244.7	259.6	145.0	147.6	155.3	136.1	249.0	104.7
Total	3,667.8	3,084.4	3,296.7	3,968.7	4,207.0	2,789.4	3,011.9	3,250.3	2,628.6	2,563.0

Note: These data support the Figure 78 chart. Columns may not add exactly to the totals due to rounding.
* Adjusted to 1994 dollars

Sources: NFIRS and NFPA Annual Surveys

Table B–6. Firefighter Injuries in Non-Residential Fires

Type	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Percent of Injuries in Fires										
Public Assembly	4.8	4.9	6.0	4.5	5.0	5.4	5.3	4.6	4.0	3.7
Eating, Drinking	7.5	7.5	5.6	6.3	5.8	7.6	5.5	7.4	5.5	6.0
Education	3.9	3.3	2.3	2.5	3.3	3.3	2.4	3.6	2.2	2.6
Institutions	1.9	2.1	2.5	2.1	1.5	2.1	3.0	2.8	2.7	3.1
Stores, Offices	23.3	21.6	22.9	19.5	24.3	22.3	19.9	19.1	24.4	21.1
Basic Industry	3.8	3.0	1.0	2.4	4.1	3.0	2.8	2.8	2.2	3.5
Manufacturing	13.0	14.8	15.3	12.6	11.3	12.9	12.9	10.9	11.5	11.4
Storage	20.7	18.7	18.1	20.5	18.2	16.4	13.8	14.5	12.7	15.7
Vacant, Construction	11.4	14.5	14.5	15.5	15.7	15.3	17.9	19.3	14.6	15.4
Outside Structure, Unknown	4.8	4.3	6.4	7.4	5.6	6.8	7.8	9.4	12.8	9.7
Number of Injuries Per 1,000 Fires										
Public Assembly	59.4	54.8	66.5	51.8	56.8	60.4	58.1	49.5	39.5	36.2
Eating, Drinking	50.1	47.0	33.9	39.1	36.2	46.7	34.1	43.4	29.8	32.6
Education	44.7	34.2	24.8	26.0	33.8	34.3	22.5	38.8	16.6	19.5
Institutions	13.2	13.0	14.6	12.4	8.8	12.7	18.6	17.2	15.0	18.1
Stores, Offices	70.6	58.6	59.9	50.5	61.9	58.3	51.8	43.2	57.0	49.4
Basic Industry	65.8	52.7	16.4	36.9	60.7	50.0	42.6	43.3	34.0	48.3
Manufacturing	69.0	71.7	71.1	56.9	52.3	64.5	68.1	57.4	55.0	52.8
Storage	72.1	58.9	52.1	55.3	51.9	50.4	39.2	36.9	33.2	54.9
Vacant, Construction	63.9	67.0	63.2	62.7	58.8	61.9	70.5	67.8	52.8	49.6
Outside Structure, Unknown	29.2	17.2	31.0	33.9	25.0	30.8	28.7	29.3	37.5	29.3
Average	52.8	46.2	45.2	49.6	49.1	51.3	44.2	43.7	39.6	38.3

Note: These data support Figures 116 and 120 charts.

Sources: NFIRS and NFPA Annual Surveys

Appendix C
NFIRS REVISION PROJECT

The current National Fire Incident Reporting System employs techniques of data entry, validation, transmittal, and analysis that represented the state of the art at the time of its original design in 1975. NFIRS, however, has become outdated by the fast pace of computer technology advances. Methods available when NFIRS was introduced are very cumbersome by today's standards, often resulting in delays in obtaining information at the local, state, and federal levels and receiving less-than thoroughly validated data. Survey feedback from participating departments, states, and vendors has resulted in an extensive list of valuable suggestions to improve the system, many of which cannot easily be implemented by way of minor alterations to the current system because of the vintage of its architecture. The suggestions fall into five broad categories:

- *Clarify the collection requirements:* Rid the system of those current data elements and codes that are no longer relevant or that are so confusing or burdensome as to diminish the likelihood of complete and accurate data entry. Also, some of the required data inputs can be easily derived from other sources.
- *Simplify the forms:* Clarify and simplify the rules for completion of paper and automated forms.
- *Accommodate local information needs:* Federal, state, and local information needs are not coincident. As many as possible of these diverse requirements need to be accommodated in a single system if participation at all levels is to be achieved.
- *Expand the breadth of the system to all incidents:* Since the introduction of NFIRS, it has become increasingly important to document the full range of fire department activities (e.g., NFIRS 4.1 does not address EMS incidents). Consequently, a revised NFIRS should encompass the full range of departmental activities.
- *Collect data relevant to incident suppression/mitigation:* Since the current system was not designed by the fire service or those who used incident data, parts of the data that are currently collected in the system are not used. Other parts are imperfectly designed, leading to poor utility for analysis or prevention programs.

As a result of these suggestions, NFIRS is under development to respond to these changes in technology and needs. The new NFIRS is a substantial revision of NFIRS 4.1. The new system will:

- Use newer computer technology.
- Delete some currently used data elements.

- Revise some currently used data elements.
- Add new data elements.
- Expand the scope of the system from fires to all incidents.

The new system will be hardware independent and will have the option of being operated by states and municipalities via the Internet. It is anticipated that these improvements will enable even more participation in the data collection system. The expected increased participation will substantially affect the completeness of the national incident database, particularly in light of the growing proliferation of computers at the state and local departmental levels. By taking advantage of newer technology, USFA can also help speed the process of collection, which will result in a more timely analysis, thereby enhancing the utility of the information.

The system under development is to be used at three governmental levels—local, state, and federal—each with distinct needs.

Participating metro fire departments (as well as all fire departments) require on-line data entry, edit, and analysis of all the information required by USFA and participating states. These departments also require information that USFA and state fire marshals do not need, such as remarks and local resource use details. The identification of specific individuals and apparatus deployed to each incident is one such example.

Participating states require on-line entry, edit, and analysis of only a subset of the data elements collected by local fire departments in order to capture state-required information submitted on paper forms by nonautomated, local departments within their jurisdictions. In addition, states require a facility to accept, edit, and merge modem and disk uploads of incident reports collected by automated local fire departments within their jurisdiction.

At the federal level, USFA accepts data from states and selected metro fire departments (i.e., fire departments not located in participating states). Validation of data is necessary at the federal level. This validation includes the ability to edit and merge incidents with the national database.

Fire departments that are not metro fire departments are responsible for procuring their own software. Those without computers must make do with paper forms that are keypunched at the state level. To maintain a national standard of fire reporting, a tight software specification will be developed as part of this project for the many software vendors who cater to the fire reporting market as well as a method of testing, registering, and tracking which vendors are in compliance with the specification.